PRIVATE AND CONFIDENTIAL

RESEARCH DEPARTMENT

THE SERVICE AREA OF THE DIVIS TRANSMITTER

Report No. K-112

(1956/15)

THE BRITISH BROADCASTING CORPORATION
ENGINEERING DIVISION

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Section	Title	Page
	SUMMARY	1
1	INTRODUCTION	1
2	GENERAL	1
3	RESULTS	1
4	CONCLUSION	5

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SUMMARY

This report gives the results of a survey of the service area of the Divis television transmitter. It is shown that the extent of the service area predicted by calculation is largely confirmed and that with the addition of the proposed transmitter at Londonderry a 95% coverage of the population of Northern Ireland should be attained.

1. INTRODUCTION.

The Divis transmitter is the first of the medium power stations to come into full service. From 1st May 1953 until 20th July 1955 a temporary service was provided in Belfast and its environs with a low power transmitter sited at Glencairn. On 21st July 1955 Divis took over the service with a 5 kW transmitter driving a three-stack superturnstile aerial. The mean e.r.p. is 12 kW.

2. GENERAL.

The survey was carried out using a horizontal loop receiving aerial mounted 12 ft (3·65 m) above ground level. The measurements were made on the vision transmission during normal programme hours. All field strengths quoted have been corrected to correspond to the value 30 ft (9·2 m) above ground level.

3. RESULTS.

A detailed survey has been carried out in Northern Ireland and south-west Scotland. The results are presented in a field strength contour map T.319 (Fig. 1), which also shows the 0·1 mV/m contour of the proposed Londonderry low power transmitter (Sheriffs Mountain site).

The field strengths in the principal towns are tabulated in Table 1.

Map T.319 (Fig. 1) shows that the whole of Northern Ireland, except the extreme south-west (Fermanagh) and a narrow coastal strip in the north-east of Antrim, receives a field strength of not less than 0·1 mV/m from either Divis or the proposed Londonderry transmitter. Belfast is very well served, the mean field strength being much in excess of 5 mV/m.

TABLE 1

Field Strength in mV/m at 30 ft (9·2 m) a.g.l.

Divis Aerial Height = 475 ft (144 m)

E.R.P. : 12 kW

Town	Max.	Mean	Min.
Antrim	13	5·6	1·1
Armagh	6·3	1·3	0·32
Ballycastle	0·07	0·03	0·01
Ballymena	3·9	0·9	0·14
Ballymoney	0·4	0·2	0·06
Banbridge	3·5	1·6	0·35
Bangor	22	4·0	0·71
Belfast		>5·0	
Bushmills	0·35	0·18	0·04
Coleraine	1·0	0·22	0·03
Cookstown	4·4	2·4	0·63
Donaghadee	5·6	1·8	0·63
Downpatrick	5·6	1·7	0·4
Dungannon	16	2·8	0·5
Dungiven	0·09	0·04	0·02
Enniskillen	0·2	0·05	0·01
Girvan	0·3	0·12	<0·1
Holywood	126	50	10
Keady	5·0	1·1	0·36
Larne	1·4	0·25	0·01
Limavady	0·8	0·2	0·04
Lisburn	56	22	5·6
Lurgan	20	6·7	2·2
Newcastle	2·2	0·63	0·25
Newry	1·4	0·32	0·09
Newtownards	8·9	3·4	1·1
Newtown Stewart	0·06	0·04	0·01
Omagh	0·5	0·1	0·03
Portadown	5·6	2·2	0·5
Portrush	0·3	0·08	0·02
Portstewart	0·35	0·1	0·03
Stranraer	0·45	0·14	0·02
Whitehead	2·2	0·9	0·35
Wigtown	0·3	0·15	0·01

As a result of complaints of poor reception in Larne, a detailed field strength survey of the town was made. The results, presented as a contour map (T.313) in Fig. 2, show that the heavily built-up business centre (Central and Inver Wards) receives a median field strength of 0·15 mV/m. The residential areas of Gardenmore, Town Parks and part of Curran receive a median field strength of about 0·6 mV/m. Outlying districts receive as much as 1–2 mV/m. Considering Larne as a whole it is estimated that the median field strength, i.e., the field strength available to 50% of the population, is about 0·25 mV/m. This field strength should provide the town with

T319

The contours represent field strength in mV/m at 30ft.(9·2m) above ground exceeded at 50% of receiving sites in a given locality. The value exceeded at 90% of receiving sites may be as much as 10 dB below the value indicated by the contours particularly in hilly and built-up areas.

Population within:

	N. Ireland.	Scotland.	Total
5 mV/m	687,300	——	687,300
0·5 mV/m	1033,800	17,600	1051,400
0·1 mV/m	1182,000	63,100	1245,100

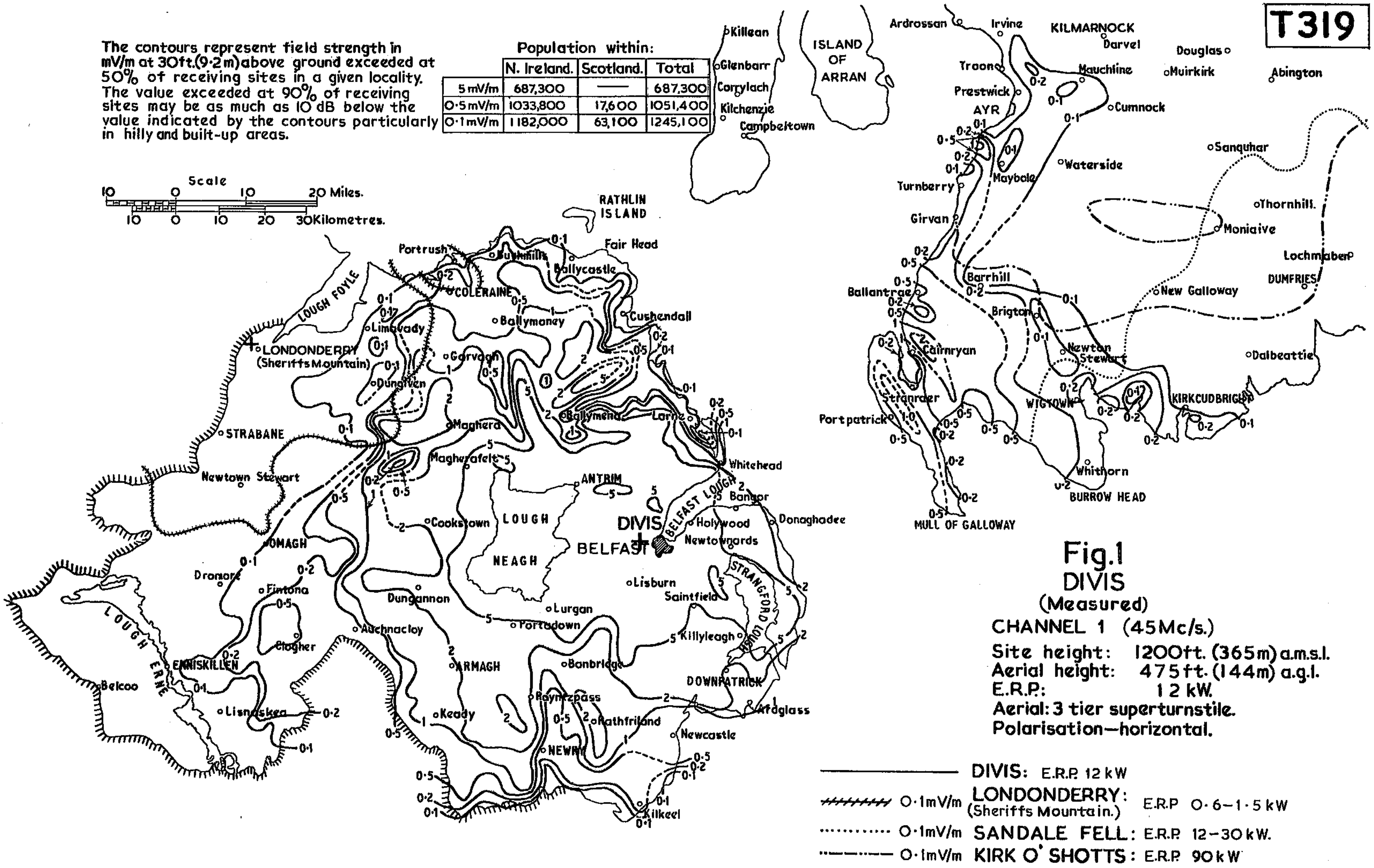

Fig.1

DIVIS

(Measured)

CHANNEL 1 (45Mc/s.)

Site height: 1200ft. (365m) a.m.s.l.
Aerial height: 475ft. (144m) a.g.l.
E.R.P.: 12 kW.
Aerial: 3 tier superturnstile.
Polarisation—horizontal.

————	**DIVIS:**	E.R.P. 12 kW
////////// 0·1mV/m	**LONDONDERRY:** (Sheriffs Mountain.)	E.R.P. 0·6–1·5 kW
·········· 0·1mV/m	**SANDALE FELL:**	E.R.P. 12–30 kW.
—·—·— 0·1mV/m	**KIRK O' SHOTTS:**	E.R.P. 90 kW

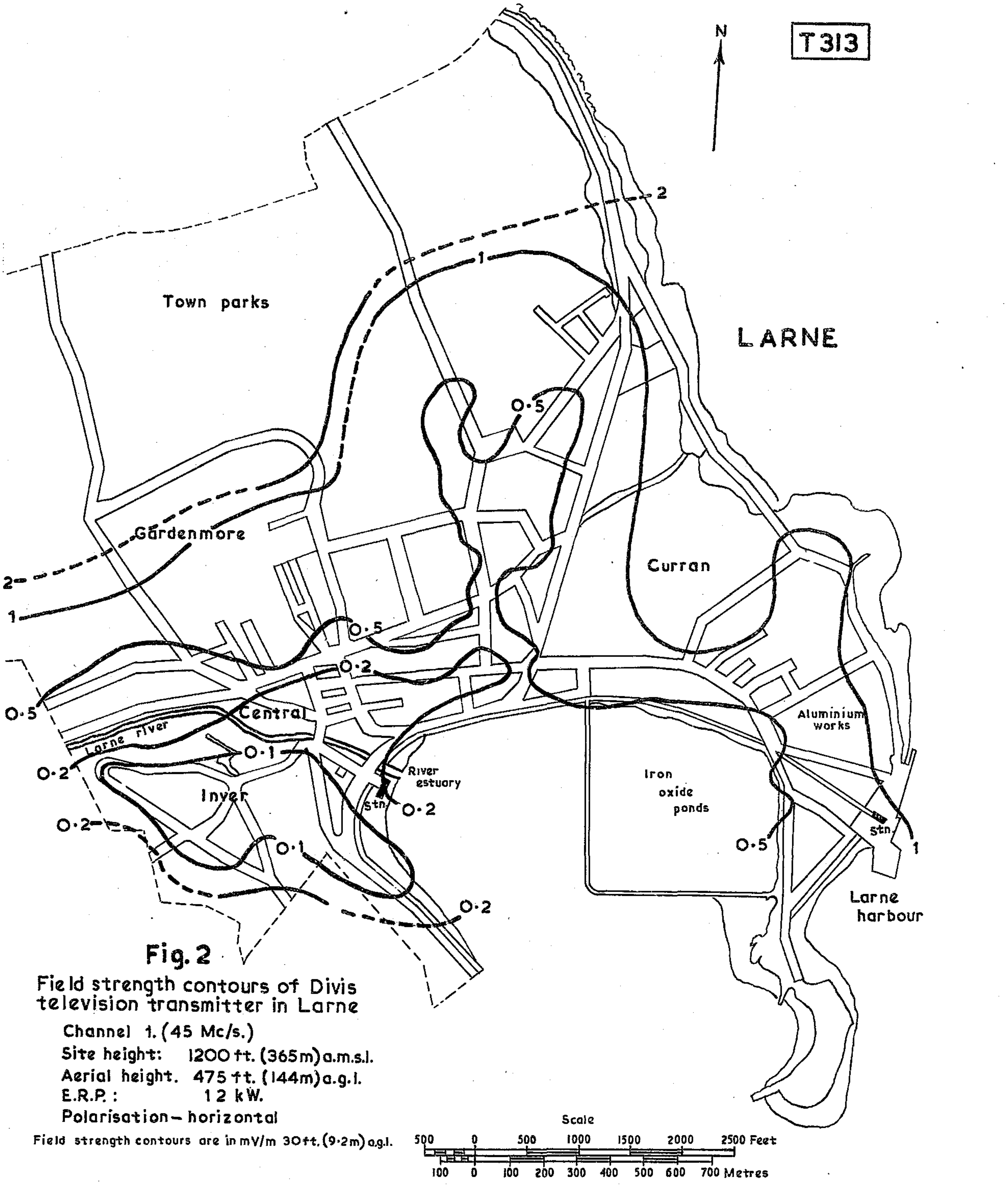

Fig. 2

Field strength contours of Divis television transmitter in Larne

Channel 1. (45 Mc/s.)
Site height: 1200 ft. (365 m) a.m.s.l.
Aerial height. 475 ft. (144 m) a.g.l.
E.R.P.: 12 kW.
Polarisation – horizontal

Field strength contours are in mV/m 30 ft. (9·2 m) a.g.l.

a second-class service, but, because Larne, in common with many Northern Ireland towns, has an exceptionally high level of electrical interference, reception in the business centre is poor. On the other hand, reception in most residential areas, i.e., where the field strength exceeds 0·5 mV/m, should be fairly good.

The relatively large towns in the south, Newry, Newcastle and Downpatrick, are, on the whole, provided with a good service. Enniskillen, in the south-west, is the only centre of population to receive less than 0·1 mV/m.

In south-west Scotland, Divis provides a field strength of at least 0·1 mV/m in almost all those parts of Wigtownshire which are beyond the range of Kirk o' Shotts and the proposed Sandale Fell transmitter. Thus, when the Sandale Fell transmitter comes into service all of south-west Scotland, except for a few small sparsely populated areas, will be provided with a television service.

Table 2, compiled by Engineering Information Department, gives the estimated population within the 5 mV/m, 0·5 mV/m and 0·1 mV/m contours in Northern Ireland and south-west Scotland.

TABLE 2

Field Strength mV/m	Northern Ireland	South-west Scotland	Total
5·0	687 300	–	687 300
0·5	1,033 800	17 600	1.051 400
0·1	1 182 000	63 100	1 245 100

The Divis transmitter serves 86% of the population of Northern Ireland. When the Londonderry transmitter comes into service it is estimated that a television service will be available to 1 310 000 people, representing 95% of the population.

4. CONCLUSIONS.

The survey of the Divis transmitter has shown that the service provided is in very good agreement with that predicted. Divis serves 86% of the population of Northern Ireland. It is expected that 95% of the population will receive a satisfactory television service when the Londonderry transmitter comes into service.

Divis also provides a service to those parts of Wigtownshire which are outside the service area of Kirk o' Shotts or of the proposed Sandale Fell transmitter.

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